



Quadratic Equation Word Problems - Intro

- 1** What are the values of a , b , and c in the quadratic formula, given this equation and the standard form?

A

$$\begin{aligned}a &= 3 \\b &= 0 \\c &= 5\end{aligned}$$

B

$$\begin{aligned}a &= 5 \\b &= 0 \\c &= 3\end{aligned}$$

C

$$\begin{aligned}a &= 0 \\b &= 5 \\c &= 3\end{aligned}$$

- 2** What are the values of a , b , and c in the quadratic formula, given this equation and the standard form?

A

$$\begin{aligned}a &= -3 \\b &= -1 \\c &= -5\end{aligned}$$

B

$$\begin{aligned}a &= -1 \\b &= -3 \\c &= -5\end{aligned}$$

C

$$\begin{aligned}a &= -5 \\b &= -3 \\c &= -1\end{aligned}$$

- 3** Which quadratic equation has these values of a , b , and c from the standard form?

A

$$y = 4x^2 - x + 2$$

B

$$y = -x^2 + 2x + 4$$

- 4** Which quadratic equation has these values of a , b , and c from the standard form?

A

$$y = -5x - 3$$

B

$$y = -3x^2 - 5$$

C

$$y = -5x - 3x^2$$

- 5** What roots (solutions) would this quadratic equation have (use the quadratic formula)?

A

$$x = \frac{-6 \pm \sqrt{28}}{-4}$$

B

$$x = \frac{-2 \pm \sqrt{28}}{-4}$$

C

$$x = \frac{-2 \pm \sqrt{28}}{-7}$$

- 6** What roots (solutions) would this quadratic equation have (use the quadratic formula)?

A

$$x = \frac{3 \pm \sqrt{13}}{-2}$$

B

$$x = \frac{3 \pm \sqrt{15}}{-2}$$

C

$$x = \frac{3 \pm \sqrt{13}}{1}$$

D

$$x = \frac{3 \pm \sqrt{10}}{-2}$$



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- 7** What roots (solutions) would this quadratic equation have (use the quadratic formula)?

A $x = 3$
 $x = -2$

B $x = 2$
 $x = 0$

C $x = -5$
 $x = 4$

D $x = 1$
 $x = 5$

- 8** What roots (solutions) would this quadratic equation have (use the quadratic formula)?

A $x = -1$
 $x = 1$

B $x = -6$
 $x = -5$

C $x = -3$
 $x = 4$

- 9** What roots (solutions) would this quadratic equation have (use the quadratic formula)?

A $x = 2.38$
 $x = 1.75$

B $x = 1.84$
 $x = 4.46$

C $x = -2.8$
 $x = -4.17$

D $x = -0.89$
 $x = 0.89$

- 10** What roots (solutions) would this quadratic equation have (use the quadratic formula)?

A $x = -1.18$
 $x = 0.67$

B $x = -5.8$
 $x = 0.62$

C $x = -1.95$
 $x = -1.43$

D $x = 1$
 $x = 0$

- 11** What is the discriminant of this quadratic equation (use the discriminant formula)?

A $\Delta = 20$

B $\Delta = 0$

C $\Delta = -20$

- 12** What is the discriminant of this quadratic equation (use the discriminant formula)?

A $\Delta = 63$

B $\Delta = 0$

C $\Delta = -63$

- 13** What is the X-coordinate of the vertex of this quadratic equation (use the vertex formula)?

A $x = 0.75$

B $x = 0.25$

- 14** What is the X-coordinate of the vertex of this quadratic equation (use the vertex formula)?

A $x = 0$

B $x = 0.75$

C $x = -0.25$

**Quadratic Equation Word Problems - Intro**

- 15** What are the values of a, b, and c in the quadratic formula, given this equation?

$$y = -4x^2 + 3x - 5$$

A

$$\begin{aligned}a &= -4 \\b &= 3 \\c &= -5\end{aligned}$$

B

$$\begin{aligned}a &= 3 \\b &= -4 \\c &= -5\end{aligned}$$

C

$$\begin{aligned}a &= -5 \\b &= 3 \\c &= -4\end{aligned}$$

- 16** What are the values of a, b, and c in the quadratic formula, given this equation?

$$y = -5x^2 - 1$$

A

$$\begin{aligned}a &= -5 \\b &= 0 \\c &= -1\end{aligned}$$

B

$$\begin{aligned}a &= 0 \\b &= -5 \\c &= -1\end{aligned}$$

C

$$\begin{aligned}a &= -1 \\b &= 0 \\c &= -5\end{aligned}$$

- 17** What roots (solutions) would this quadratic equation have?

$$y = 2x^2 + 4x$$

A

$$\begin{aligned}x &= 0 \\x &= -2\end{aligned}$$

B

$$\begin{aligned}x &= -2 \\x &= -5\end{aligned}$$

C

$$\begin{aligned}x &= -3 \\x &= 2\end{aligned}$$

D

$$\begin{aligned}x &= 4 \\x &= -4\end{aligned}$$

- 18** What roots (solutions) would this quadratic equation have?

$$y = x^2 - 2 + x$$

A

$$\begin{aligned}x &= 3 \\x &= -3\end{aligned}$$

B

$$\begin{aligned}x &= -6 \\x &= -1\end{aligned}$$

C

$$\begin{aligned}x &= 1 \\x &= -2\end{aligned}$$

D

$$\begin{aligned}x &= 3 \\x &= 0\end{aligned}$$

**Quadratic Equation Word Problems - Intro**

- 19** What roots (solutions) would this quadratic equation have?

$$y = x^2 - 3x + 1$$

A $x = \frac{3 \pm \sqrt{2}}{2}$

B $x = \frac{3 \pm \sqrt{8}}{2}$

C $x = \frac{3 \pm \sqrt{6}}{2}$

D $x = \frac{3 \pm \sqrt{5}}{2}$

- 20** What roots (solutions) would this quadratic equation have?

$$y = x^2 - 2$$

A $x = \frac{\pm \sqrt{10}}{2}$

B $x = \frac{\pm \sqrt{11}}{2}$

C $x = \frac{\pm \sqrt{8}}{2}$

- 21** What roots (solutions) would this quadratic equation have?

$$y = 2x^2 + 4x - 3$$

A $x = -2.03$
 $x = 2.02$

B $x = 0.58$
 $x = -2.58$

C $x = 3.57$
 $x = -3.84$

D $x = -4.75$
 $x = 3.5$

- 22** What roots (solutions) would this quadratic equation have?

$$y = 5x^2 - 2x - 5$$

A $x = 5.64$
 $x = 5.81$

B $x = -4.19$
 $x = 3.09$

C $x = 1.22$
 $x = -0.82$

D $x = 1.41$
 $x = -0.59$

- 23** What is the discriminant of this quadratic equation?

$$y = -3x^2 + x - 4$$

A $\Delta = 47$

B $\Delta = 0$

C $\Delta = -47$

- 24** What is the discriminant of this quadratic equation?

$$y = -5x^2 - 2 - 3x$$

A $\Delta = 0$

B $\Delta = -31$

C $\Delta = 31$

**Quadratic Equation Word Problems - Intro**

- 25** What is the X-coordinate of the vertex of this quadratic equation?

$$y = 5x^2 + 4x + 3$$

A $x = -1.15$

B $x = 0.6$

C $x = -0.4$

- 26** What is the X-coordinate of the vertex of this quadratic equation?

$$y = 2x^2 - x + 3$$

A $x = -0.25$

B $x = 0.25$

C $x = 0.5$

- 27** What equation gives the area of the garden?

A rectangular garden is built along x meters of a wall using a total of 27m of fencing for the other 3 sides.

A $A(x) = x \cdot (27 - 2x)$

B $A(x) = x \cdot \left(\frac{27 - x}{2}\right)$

C $A(x) = x \cdot \left(\frac{27 + x}{2}\right)$

- 28** What equation gives the area of the garden?

A 9 by 3 garden has a ditch of width x on all sides. Its total area, including the ditch is 77.

A $77 = (9 + 2x) \cdot (3 + 2x)$

B $77 = (9 - 2x) \cdot (3 - 2x)$

C $77 = (2 \cdot 9 + x) \cdot (2 \cdot 3 + x)$

- 29** What quadratic equation, in standard form, comes from calculating the area of the parking lot?

A parking lot that is a rectangle shape is enclosed by x meters of a wall on one side and 15m of fencing on the other 3 sides.

A $A(x) = -0.5x^2 + 7.5x$

B $A(x) = 1.5x^2 + 4.5x$

- 30** What equation gives the volume of the box?

A box is made from a 2cm by 11cm sheet of cardboard by cutting x cm into each side and folding up.

A $V(x) = \left(2 - \frac{x}{2}\right) \cdot \left(11 - \frac{x}{2}\right)$

B $V(x) = (2 - 2x) \cdot (11 - 2x)$



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- 31** What quadratic equation, in standard form, comes from calculating the volume of the box?

A box is made from a 11cm by 9cm sheet of cardboard by cutting x cm into each side and folding up.

A $V(x) = 4x^2 + 40x + 99$

B $V(x) = 2x^2 + 35x + 99$

C $V(x) = 4x^2 + 36x + 101$

- 32** What quadratic equation, in standard form, comes from calculating the area of the painting?

A 2 by 10 painting has a border of width x on all sides. Its total area (border included) is 66.

A $A(x) = 8x^2 + 24x + 17$

B $A(x) = 4x^2 + 24x + 20$

- 33** What quadratic equation, in standard form, would solve for the border width?

A 3 by 5 painting has a border of width x on all sides. Its total area (border included) is 28.

A $4x^2 + 16x - 13 = 0$

B $7x^2 + 16x - 13 = 0$

C $8x^2 + 16x - 16 = 0$

- 34** Given this equation for the height of a soccer ball kicked from ground, what would you use to find when the ball lands?

$$h(t) = -10t^2 + 6t + 2$$

A The x value of the vertex

B The y value of the vertex

C The root of the quadratic

- 35** Given this equation for the height of a long jumper as a function of distance from the line, what would you use to find the distance where the long jumper lands?

$$h(x) = -6x^2 + 8x + 8$$

A The y value of the vertex

B The root of the quadratic

C The x value of the vertex

- 36** Given this equation for the area of a garden along a wall, what would you use to find the x dimension that maximizes area?

$$A(x) = -0.5x^2 + 10x$$

A The x value of the vertex

B The root of the quadratic

C The y value of the vertex

- 37** Given this equation for the volume of a box cut from a sheet of cardboard, what would you use to find the maximum volume possible?

$$V(x) = 4x^2 + 28x + 48$$

A The y value of the vertex

B The root of the quadratic

C The x value of the vertex

- 38** Given this equation for the height of a soccer ball kicked from ground, when is it at its highest point?

$$h(t) = -11t^2 + 4t + 4$$

A $t = 2.682s$

B $t = 1.818s$

C $t = 0.182s$



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- 39** Given this equation for the revenue from a lemonade stand, what would you use to find the price that generates the most revenue?

$$R(p) = -50.00p^2 + 220.00p$$

- A The y value of the vertex
B The root of the quadratic
C The x value of the vertex

- 40** Given this equation for the profit as a function of production volume, what would you use to find the production volume that maximizes profit?

$$P(v) = -5v^2 + 6v + 10$$

- A The x value of the vertex
B The y value of the vertex
C The root of the quadratic

- 41** What value of x would maximize the area of the parking lot?

A parking lot that is a rectangle shape is enclosed by x meters of a wall on one side and 28m of fencing on the other 3 sides.

- A $x = 12.75m$
B $x = 14m$
C $x = 12m$

- 42** Given this equation for the height of a rocket as a function of time, what is its maximum height?

$$h(t) = -6t^2 + 4t + 3$$

- A $h = 4.917m$
B $h = 3.667m$
C $h = 6.417m$

- 43** Given this equation for the height of a water jet as a function of distance from the fountain, where is it at its highest point?

$$h(x) = -11x^2 + 5x + 5$$

- A $x = 0.227m$
B $x = 1.977m$
C $x = 2.273m$

- 44** Given this equation for the height of a water jet as a function of distance from the fountain, what is the maximum height it reaches?

$$h(x) = -6x^2 + 4x + 7$$

- A $h = 7.417m$
B $h = 7.667m$

- 45** What is the maximum possible area of the garden?

A rectangular garden is built along x meters of a wall using a total of 19m of fencing for the other 3 sides.

- A $A = 43.125m^2$
B $A = 46.125m^2$
C $A = 45.125m^2$

- 46** What is the volume of sales as a function of price?

A lemonade stand sells 60 drinks for \$11 each. For every \$0.04 increase in price 1 fewer will be sold.

- A $V(p) = -9.09p + 210.00$
B $V(p) = -16.67p + 285.00$
C $V(p) = -16.67p + 85.00$



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47 What equation gives the revenue (volume $\times$ price) at a given price?

A movie theater sells 40 tickets for \$6 each. For every \$0.08 increase in price 1 fewer will be sold.

A $R(p) = p \cdot (-25.00p + 52.50)$

B $R(p) = p \cdot (-16.67p + 90.00)$

C $R(p) = p \cdot (-400.00p + 52.50)$

48 What value of x would maximize the volume of the box?

A box is made from a 6cm by 6cm sheet of cardboard by cutting x cm into each side and folding up.

A $x = 0.25\text{cm}$

B $x = 3\text{cm}$

49 What quadratic equation, in standard form, comes from calculating the revenue based on price?

A lemonade stand sells 40 drinks for \$8 each. For every \$0.08 increase in price 1 fewer will be sold.

A $R(p) = -21.00p^2 + 140.00p$

B $R(p) = -25.00p^2 + 140.00p$

50 What is the maximum volume of the box?

A box is made from a 4cm by 3cm sheet of cardboard by cutting x cm into each side and folding up.

A $V = 0.25\text{cm}^2$

B $V = 1\text{cm}^2$

C $V = 2\text{cm}^2$

51 What price would maximize the revenue?

A lemonade stand sells 50 drinks for \$8 each. For every \$0.08 increase in price 1 fewer will be sold.

A $p = \$0.09$

B $p = \$0.04$

52 What is the maximum possible revenue?

A movie theater sells 60 tickets for \$7 each. For every \$0.02 increase in price 1 fewer will be sold.

A $R = \$25.17$

B $R = \$25.18$

C $R = \$25.22$

53 What is the border width that gives a total area of 18m^2

A 2 by 3 painting has a border of width x on all sides. Its total area (border included) is 18.

A $x = 2.886\text{m}$

B $x = 0.614\text{m}$

C $x = 0.886\text{m}$

54 Given this equation for the height of a rocket as a function of time, when does it land?

$$h(t) = -8t^2 + 7t + 2$$

A $t = 3.352\text{s}$

B $t = 2.352\text{s}$

C $t = 1.102\text{s}$



Quadratic Equation Word Problems - Intro

- 55** Given this equation for the height of a water jet as a function of distance from the fountain, where does it land?

$$h(x) = -3x^2 + 6x + 3$$

- | | |
|---|--------------|
| A | $x = 2.414m$ |
| B | $x = 2.914m$ |
| C | $x = 4.664m$ |

- 56** Given this equation for profit as a function of production volume, what is the optimal volume?

$$P(v) = -9v^2 + 3v + 10$$

- | | |
|---|-------------|
| A | $v = 0.583$ |
| B | $v = 0.167$ |
| C | $v = 0.417$ |

- 57** Given this equation for the profit as a function of production volume, what is the maximum profit?

$$P(v) = -3v^2 + 10v + 2$$

- | | |
|---|---------------|
| A | $P = 10.333v$ |
| B | $P = 10.833v$ |
| C | $P = 11.583v$ |

- 58** Given this equation for profit as a function of production volume, what volume leads to zero profit?

$$P(v) = -5v^2 + 7v + 9$$

- | | |
|---|-------------|
| A | $v = 2.213$ |
| B | $v = 0.963$ |
| C | $v = 4.213$ |